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# A Study of Self-Plagiarism in Computer Science

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## Abstract

For this purpose, we introduce a web spider that automatically downloads research articles from the websites of the top fifty Computer Science departments in the country. academics in the field of Computer Science have a habit of plagiarizing their own work. There are instances of self-plagiarism for each author, and they are re reported in so that they may be looked at so that verify whether these documents are really fake.

## 1 Introduction

Self-plagiarism occurs when an author reuses his or her own previously published works in a new publication without giving proper citation. as a point of departure Self-plagiarism opens the door to excessive amounts of academic papers are expected to be written. without putting in extra time and effort to produce brand new documents. Consequently, essentially equivalent articles might be developed and sent to periodicals for no other reason than The goal is to raise the profile of the institution. from the researcher's point of view. But such methods never in that they help the scientific community as a whole in the sense that Paperwork increases, while fewer cutting-edge studies are published. material to spark fresh thoughts. As an alternative, we may use the pool when a stack of articles on the same topic yet they're called something else here. This study aims to determine whether or not The Question of Whether or Not Top Computer Science colleges and institutions that condone such behavior. Essentials, at their most notion is to use a web spider to go through the upper 50 CS programs to determine the commonalities the ultimate pages. To get the full list of downloads for each professor, a lecturer's scholarly writings. When you've got them in text form,

you may system for analyzing texts for instances of self-plagiarism and to report any professors or articles that violate academic integrity. This means that each reported case would need manual verification. Verify if the resemblances are indeed a result of scholarly dishonesty. Look at the example in Figure 1.

## 2 Related Work

We are most similar to CORA, a search engine for computer science research papers [2]. CORA used very intelligent spiders in their efforts. computer science-related websites in order to compile an index of There are documents in here somewhere. Differences between and That spider is identical to the one we're employing. intended for real-time searching for a single professor's focus on one piece of work at a time instead of hand to collect data in the outset. The Stanford Copy Analysis Mechanism SCAM [3] is a comparative tool used to identify include similar documents or publications with a high degree of duplication An online registration server is used by SCAM. which original papers may be registered by in addition to the writers that created them. An attempt to register pirate copies registrations can identify duplicates. Web crawlers may also be utilized for this purpose. to check records against a central database corresponding paperwork in a style somewhat dissimilar to our system.

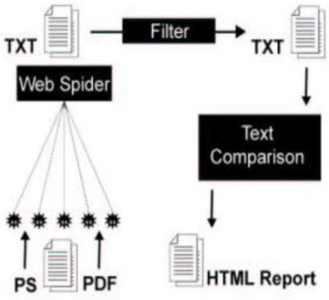


Figure 1: Overview of the system.

## The Web Spider

The original code for the web crawler was written in WebL [1]. WebL's man Usual defifines itself as a "language and system is designed for quick experimentation with Web-based calculations. It works effectively for automating processes on the Modules in the software make it possible for the program to work with the World Wide Web. mer to rapidly create a web-scraping robot. The goods web crawler that can efficiently track out and provide Professors' websites and paper downloads must be secure. heavy restraints needed to avoid multiple serious issues documents, which arise while doing so: Keep reading the rest of the professor's page: During the time of the examination a page, which pages are appropriate? or not, and why.

Simply put, just academic papers: In the last moments before touching Whether I were to load a fifile, how could I tell if it was a The question is whether or not you will write a research paper. An apparently infinite network diagram: traversing links on the website of a single professor, when If the spider gives up, does that mean it's a loser?

Slow downloads: If downloading a 30Mb article, when the data transport rate is less than 1Kb bother downloading it spider In a perfect world, a web spider would begin its journey at the check out the professor's webpage and click through all the links downloading every study ever conducted in that field This is plausible if framed as a graph issue. doable only if there was just one input to the graph, the college homepage with no external links or buttons on his page. A real-life example of a faculty web page includes extensive network of outbound connections to related resources, starting with Classes he teaches lead to engaging content on a global scale. the World Wide Web. Trying each and every possible connection would lead to spider wanders far from intended location It may seem like a long time to comprehend just one professor's infinite, in addition to downloading massive amounts of useless npapers.

The restrictions on where they may go were put in place for many reasons. That spider may leave. The first step was to look for terms like "publishing," "paper," and "re" search. These connections might potentially have a disadvantage breed-specific components. Assuming no associations with any if the search terms were part of the key phrases, The professor's whole oeuvre was subjected to a breadth-first search. links. This spider also has this restriction imposed on it: there were only certain kinds of connections that could be used occupied the same primary location.

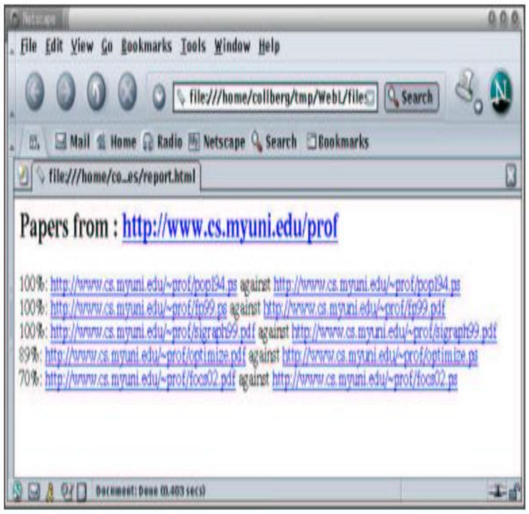
Several research articles may be found on the web pages of academics. websites in the more common.pdf,.ps, and.doc file types. In rather than trying to identify whether or not an article is a In any case, the spider just downloads the results of your search. all of them. After getting the necessary files and programs down One software, fifilter, is used after all fi files, including those that did not convert correctly and any others not constitute scholarly works Formatting a Research Paper: The Golden Rule which is to say, they need to have some kind of introduction or abstract and a list of sources used as a reference. This The same procedure used by CORA to locate the missing The results of studies and tests confirming its effectiveness were published around a 95% degree of correctness. Attempts at Discrimination whether or not research articles can be determined There are no differentiating features, therefore pers is constrained. features in the link's or the paper's title that indicate its nature paper's worth or value. The fact that just one person may access a website is a further The professor's website might include many tiers of content, meaning hundreds, if not thousands, of searches (including page loads) for his files. The In order to keep track of when a professional has been spider-set using a timer that The place of  is being investigated initially. Whenever a spider preparations to find a new page, download a document, or Check the time when you go to a different page. So long as it is if the wait is too lengthy, the download will be canceled and a fresh pages and going to those sites. There's a problem with downloading huge amounts of paper through a little hole, just to have it all go to waste.  long periods of time is difficult to monitor. This place we're on, called the Internet Therefore, the spider has the unenviable situation of having to Possibly this will happen if you wait for the fifiles to download. lose precious minutes meant for finding a certain website of the lecturer. The only protection against this is because the spider has a web full of strands, each of which it's all about the crawl. Since there are so few strands, if one becomes tangled using a large fifile downloaded over a sluggish connection, Those who aren't satisfied with their findings might keep looking for more papers.

## Text Comparison

A new text comparison tool has been added. is a separate component from the main program in Java.

internet spider Once the spider that spun the web has finished settling down Papers for a certain class are loaded and converted. A lecturer uses a text-comparison program. at the index containing those files. A practical Each article in the collection is subjected to a pairwise comparison by the directory. An Algorithm for Comparing Results 4.1 It was necessary to first ask the question of the finer points of what it means to plagiarize. Every conceivable obstructing Plagiarism occurs when words are lifted word for word, yet there are numerous additional scenarios to take into account:

Alterations made only for the sake of appearance, including minor textual tweaks, Including but not limited to the insertion or deletion of punctuation There shouldn't be any difference in the comparison due to the or. Changes in paragraph or sentence order from A copy may be made and moved to a new location, as per Instructed to place A' paper order. If most of the information is even if it's the same, this should be picked up on. Text that has been rephrased without changing its meaning cannot alter the meaning, even substitution definitions of a few words to serve as interchangeable equivalents sentences, or clauses, should be nabbed. While far less serious than blatant text theft, there is still enough here to count as a plagiarism.


Netscape
File Edit View Go Bookmarks Tools Window Help
file:///home/collberg/tmp/WebL/file
Search
Mail Home Radio Netscape Search Bookmarks
file:///home/co...es/report.html
Document: Done (0.403 secs)

Papers from : http://www.cs.myuni.edu/prof

100%: http://www.cs.myuni.edu/~prof/popl94.ps against http://www.cs.myuni.edu/~prof/popl94.ps
100%: http://www.cs.myuni.edu/~prof/fp99.ps against http://www.cs.myuni.edu/~prof/fp99.pdf
100%: http://www.cs.myuni.edu/~prof/sigraph99.pdf against http://www.cs.myuni.edu/~prof/sigraph99.pdf
89%: http://www.cs.myuni.edu/~prof/optimize.pdf against http://www.cs.myuni.edu/~prof/optimize.ps
70%: http://www.cs.myuni.edu/~prof/focs02.pdf against http://www.cs.myuni.edu/~prof/focs02.ps

Figure 2: Reports are presented in a standard browser.

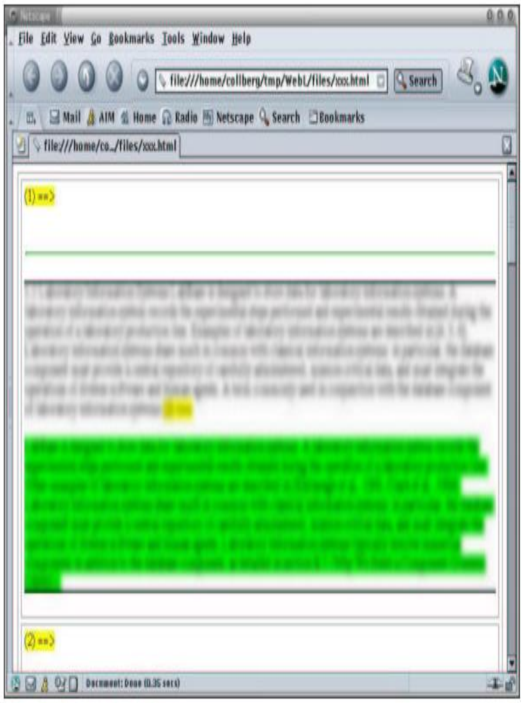

Netscape
File Edit View Go Bookmarks Tools Window Help
file:///home/collberg/tmp/WebL/files/xxx.html
Search
Mail AIM Home Radio Netscape Search Bookmarks
file:///home/co.../files/xxx.html
(1) ==>
(2) ==>
Document: Done (0.35 secs)

Figure 3: The technique enables a deeper dive into two publications. Paragraphs that are structurally similar are displayed in different colors in a web browser.

## Parsing into Canonical Form

The initial step is converting each text file into a Doc format. an Article object contains a collection of Paragraph objects, each subsequently contains a collection of Sentence objects. The In a text file, the original source's URL should be included. the last file on the first line, which is taken from the first file, each line being followed by a whole paragraph. Each Paragraphs start on the second line following the colon. Anything enclosed by brackets is a sentence. figurative language! . ? ;. Insufficiently four-paragraph sentences are thrown out because they are likely just the titles of sections, elements of formulae, or other dominating and meaningless prose. When a paragraph contains At the very Sentence length (or thereabouts), the generated text for the sentence is lower cased and processed into words. It's often accepted that any word that separated by blanks or the following characters: ! . ? " \ < > : ; [ ] { } ( ) / Blanks and delimiters are stripped off. and nothing else is stored but the list of words. limited, predetermined set of items not considered important by sentences (a, an, the, this, etc.) As with Paragraphs, any Fewer than four-word sentence (after dropping useless ones) are thrown out. Most phrases aren't worth keeping. fewer than four significant words are not actual Sentences: Completely Real Sentences are too brief to provide any meaningful information and hence fail worth examining as a point of comparison, rather than store has a huge number of individual strings are represented by numbers on a global scale to their exact integer equivalents is preserved Throughout the whole software, when each word in a phrase is parsed into its constituent If the table already contains the term, That's the one we're going with, else we just drop the word in. into the database with a different, new value. sentence then keeps track of its own special terms (as arrays of sorted integers; the sum of the array values of each of its words; and the first phrase, in its sequence with blanks between each conventional word.

## 4.3 Comparison Algorithm

After processing all of the papers, every possible combination of Similarity between papers is measured by a score situated between them. Every matched set of sentences in the Using a scoring rubric, we compare two papers. matching sentences to see how they compare to one another. Then, the best paragraphs rise to the top of the results list. bonus points for repetitions of phrases or clauses which, together with their resemblance to the document, earns the quantity of identified every paragraph has more than a reach a specific point. Similarity analysis between sentences is performed on two levels. Similar sentences get the most points. a good score; closely related sentences each other obtain a score between 50 and As much as a hundred percent of the total potential score associated with the sameness. Equality of punishment comparison is convenient and highly optimized. Prior to any search just looking at the words in a phrase, the "totals" of the two The sentences are compared using the data gathered during the parsing process. If They are obviously different from one another. There is a difference between the sentences. Despite the fact that It is possible for the values of these totals to overlap. to find a comma splice between two completely distinct phrases is quite unusual. avoid making incongruous parallels as much as possible. Only if the total number of words in two separate sentences is All other aspects of the strings being compared are the same. Matches between the intersection if the size of their word lists is comparable or smaller than the sets themselves yet nonetheless sizable To put it simply, ever since the Ordered lexical lists of distinct words are kept. Utilizing binary search, one may quickly and accurately compute measurement of the extent of the sets' intersection. As you can see from this contrast, This optimization extends to the case of son, which is now only activated when Significant parallels may occur. Phrases that include a huge variation in the length of their individual words sentences with sets or extremely are disregarded. discrete groups of special words.

### 4.4 Reporting Results

After having papers in a pair scored against one another, they are assigned a numerical value to serve as a symbol of the approximativ percentage of similarity between the two. A document's score is basically equivalent to duplicated sentences anywhere in the paper. Simply divide by the % to get that figure. by a factor that depends on the average paper length and multiplies 100. After comparing every possible set of papers, Listed below are the papers and the percentages they comprise: results are sorted and written out in decreasing order in the form of an HTML file in the folder. For the apex of the file provides the starting point's URL for accessing the documents were saved to disk. The following list consists of data in percentages with references in to retain their original structure.

## 5 Future Work

When the complete computer science site is crawled, the spider will likely be able to locate better publications in the future. In this scenario, any document may be accessed electronically and converted. To begin with, they would be filtered, and then data was sorted into each professor's folder, directories. A spider might put into effect a more efficient schema like reinforcement learning, but with fewer assumptions limited mobility and available time. Given its present condition, a amount of legitimate documents and a number of fake documents collected. Even after all this time, there is still a lot that may be added to the advantages when comparing. As of this now, the lack of efficacy and precision, there are still room for improvement in terms of speed. In contrast, the most significant enhancement would be such that relative standards may be modified, This allowed the user to choose between faster loading times and greater speed furthermore, an even greater precision. A number of There is an almost endless supply of data that might be demonstrated examinationed to better detect potential plagiarism. For example, some intriguing criteria may be:

the prevalence of often reoccurring terms recur often in both documents, and

1) The degree to which one set of data uniquely word groups for each whole text. The comparative usefulness has been further enhanced by would make it possible to compare and contrast things in greater detail and rather than relying on pairwise comparisons, global document scoring good analogy Perhaps much more so, for example to determine how much plagiarism exists in a rather have a paper from the other five than a distinct five comparisons.

## Conclusions

We provide a web crawler and a text comparison tool to identify instances of academic self-plagiarism in the field of Computer Science.

## References

*[1] T. Kistler and H. Marais. WebL – A programming language for the web. In Proceedings of WWW7, pages 259–270. Elsevier, 1998.*

[2] Jason Rennie and Andrew Kachites McCallum. Using reinforcement learning to spider the Web effificiently. In Ivan Bratko and Saso Dzeroski, editors, *Proceedings of ICML-99, 16th International Conference on Machine Learning*, pages 6335–343, Bled, SL, 1999. Morgan Kaufmann Publishers, San Francisco, US.

[3] Narayanan Shivakumar and H Molina. SCAM: A copy detection mechanism for digital documents. In *Proceedings of the Second Annual Conference on the Theory and Practice of Digital Libraries*, 1995.